

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
03 November 2022 (03.11.2022)



(10) International Publication Number
WO 2022/232425 A3

- (51) International Patent Classification:
C12Q 1/6844 (2018.01) C12Q 1/6816 (2018.01)
- (21) International Application Number:
PCT/US2022/026777
- (22) International Filing Date:
28 April 2022 (28.04.2022)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
63/181,769 29 April 2021 (29.04.2021) US
- (71) Applicants: **ILLUMINA, INC.** [US/US]; 5200 Illumina Way, San Diego, California 92122 (US). **ILLUMINA CAMBRIDGE LIMITED** [GB/GB]; 19 Granta Park, Great Abington, Cambridge United Kingdom CB21 6DF (GB).
- (72) Inventors: **GORMLEY, Niall Anthony**; 19 Granta Park, Great Abington, Cambridge United Kingdom CB21 6DF

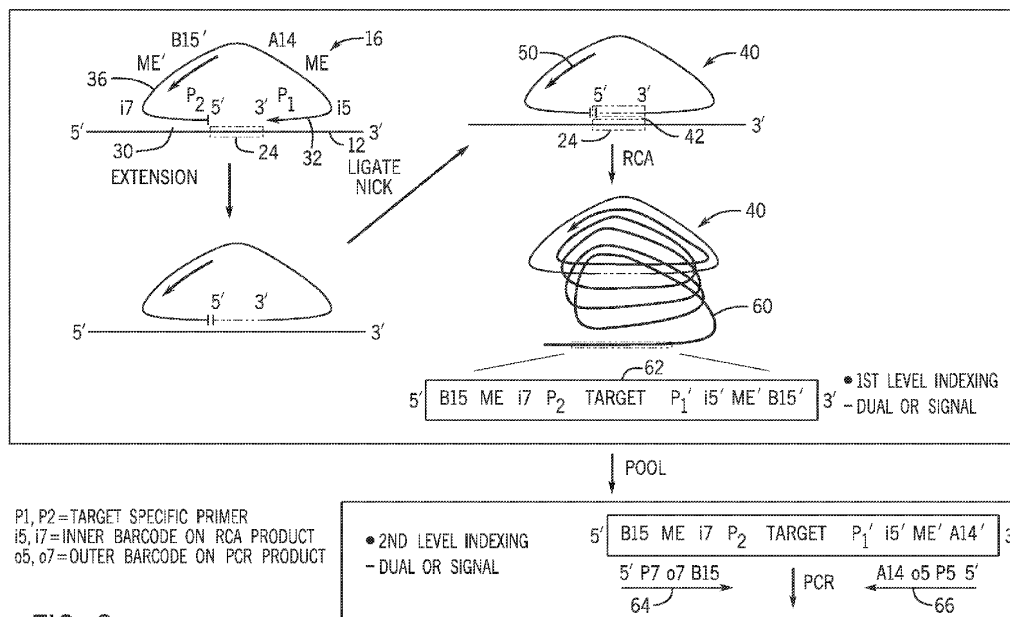
(GB). **WANG, Clifford Lee**; 5200 Illumina Way, San Diego, California 92122 (US).

(74) Agent: **BAKKER, Jila et al.**; P.O. Box 692289, Houston, Texas 77269 (US).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ,

(54) Title: AMPLIFICATION TECHNIQUES FOR NUCLEIC ACID CHARACTERIZATION



(57) Abstract: Nucleic acid amplification techniques are disclosed. Embodiments include generating concatenated nucleic acids using rolling circle amplification of templates, e.g., starting from a cDNA of a full-length mRNA or from synthetic templates, and sequencing and/or detecting the concatenated nucleic acids. In some embodiments, the technology disclosed includes amplification reactions that include CRISPR-Cas interactions that generate primers as a result of the CRISPR-Cas interactions, whereby primers are in turn used as part of detectable amplification reactions. The disclosed amplification techniques may use synthetic oligonucleotides or primers.

[Continued on next page]

UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:

01 December 2022 (01.12.2022)